

## **CUSHION MEMBERS FOR A BACK SUPPORT**

### **BACKGROUND OF THE INVENTION**

The present invention relates to cushion members for a back support, and  
5 more particularly to cushion members for a back support provided on various articles  
such as a rucksack and a chair to well ventilate between a user's back and the back  
support, so that the perspiration and heat generation by the user can considerably be  
reduced.

Generally, a rucksack is a bag made of sturdy material and furnished with  
10 shoulder straps, and is designed for carrying articles such as camping, fishing or  
traveling supplies on the back.

Recently, the rucksack is also being widely used by students for keeping  
their books and various things.

The rucksack comprises a body for keeping articles therein, a pair of  
15 shoulder straps attached to the body to be carried on both shoulders of a user, and an  
opening and closing means, e.g., a zipper to open and close the body.

In case of the rucksack for climbing, in addition to the shoulder straps, a  
waist belt and a breast belt are provided so that the rucksack can contact close to a  
user's waist and breast.

20 If such a rucksack is filled with various things and worn by the user by the  
shoulder straps, the load acts backward due to the weight of the articles kept in the  
rucksack, which leads the rucksack to contact the user's back closely.

Accordingly, if the rucksack is worn for a long time, the user perspires a lot  
on his back and the heat comes out, which leads the user to feel fatigue easily and

deteriorates the pleasantness of wearing the sack.

In order to improve the above problems, a rucksack including a back support formed in the shape of meshes has been disclosed in Japanese Patent Publication No. 1991-71881, Japanese Patent Laid-Open No. 1996-242923, Japanese Patent No. 3034502 and Japanese Patent Laid-Open No. 2000-152819.

However, since such conventional rucksacks included fine meshes in the back supports, the size of the meshes was not sufficient for ventilation and they still gave unpleasantness to the user if worn for a long time.

Meanwhile, during the summer season when the external temperature and/or humidity is very high, people who spend most of their working time sitting on chairs have no choice but to suffer from the loss of concentration on their work or feel unpleasant due to perspiration and heat generation from their backs while sitting on chairs.

## BRIEF SUMMARY OF THE INVENTION

Accordingly, the object of the present invention is to provide cushion members for a back support provided on various articles such as a rucksack and a chair to well ventilate between a user's back and the back support, so that the perspiration and heat generation by the user can considerably be reduced.

Another object of the present invention is to provide cushion members for a back support, which enables a user to feel cushioned and feel comfortable even after the user's wearing a rucksack or sitting on a chair for a long time.

In order to achieve the above objects, according to the present invention, a cushion member for a back support provided on one side of articles with which a user's

back contacts comprises:

a base made from hard plastic material; and

a plurality of cushioning elements provided on one side of the base where  
the user's back contacts, wherein each of the cushioning elements includes a plurality of  
5 ribs forming an internal space therein and a plurality of holes formed by the neighboring  
ribs and communicated with the internal space.

#### BRIEF DESCRIPTION OF THE DRAWINGS

The accompanying drawings, which are included to provide a further  
10 understanding of the invention and are incorporated in and constitute a part of this  
specification, illustrate embodiments of the invention and together with the description  
serve to explain the principles of the invention, wherein:

Fig. 1 is a front view showing a first embodiment of the present invention;

Fig. 2 is a front view of a rucksack to which the first embodiment of the  
15 present invention is applied;

Fig. 3 is a sectional view along the line A-A of Fig. 2;

Fig. 4 is a sectional view of a cushioning element of a cushion member  
according to the present invention;

Fig. 5 is a front view showing a second embodiment of the present  
20 invention;

Fig. 6 is a sectional view along the line B-B of Fig. 5;

Fig. 7 is a front view showing a third embodiment of the present invention;

Fig. 8 is a front view showing a fourth embodiment of the present invention;

Fig. 9 is a perspective view showing a first embodiment of the cushioning

elements according to the present invention;

Fig. 10 is a perspective view showing a second embodiment of the cushioning elements according to the present invention;

Fig. 11 is a perspective view showing a third embodiment of the cushioning element according to the present invention; and

Fig. 12 is a perspective view showing a fourth embodiment of the cushioning elements according to the present invention.

#### DETAILED DESCRIPTION OF THE INVENTION

Reference will now be made in detail to preferred embodiments of the present invention in conjunction with the accompanying drawings.

Figs. 1 to 3 show a first embodiment of the present invention, in which a cushion member (1) is provided on the back of a rucksack. The cushion member can be provided on one side of other various articles such as chairs with which a user's back contacts.

The cushion member (1) for a back support comprises a base (2) made from hard plastic material, which is a substitute for high-density foam sponge and urethane non-woven fabric, and a plurality of cushioning elements (3) provided on one side of the base (2) where the user's back contacts to ventilate between the user's back and the back support.

When the cushioning elements (3) are applied to a rucksack (4) as shown in Fig. 2, they do not only ventilate between a wearer's back and a back plate of the rucksack (5), but also diffuse the load of the rucksack (4) over the entire back of the wearer.

The base (2) may be formed in a size to contact the whole user's back. That is, the base (2) can be provided over the whole back plate (5) of the rucksack (4) as in Figs. 1 and 2.

Further, the base (2) can also be formed in a plurality of unit bases to be  
5 provided on different parts of the back support where the user's back contacts.

The cushioning elements (3) can be provided all over the base (2) or on a certain part of the base (2). As shown in Figs. 1 to 3, the cushioning elements (3) can be formed substantially all over the base (2).

Also, in consideration of the structure of human body, it is possible to  
10 provide a plurality of the unit bases or the cushioning elements (3) on certain parts of the back support where the user's back contacts, as shown in Figs. 5, 7 and 8. In this case, as the cushion member (1) consists of one unit member, it is convenient and simple to attach it to the back support.

In a second and a third embodiment within the scope of the present  
15 invention, as shown in Figs. 5 and 7, the base (2) is divided into two unit bases to be provided on two opposing parts of the back support of the rucksack (4) or the chair.

When the two unit bases (2) are symmetrically provided on the back support, it is preferable that the cushioning elements (3) be formed to have different heights and widths. That is, as shown in Fig. 6, the cushioning members (3) on the far edge of the  
20 unit base (2) can be formed to be higher and larger than those formed in the center of the unit base (2). This makes the wearer feel comfortable while shouldering the rucksack (4).

Fig. 8 is a front view of a fourth embodiment within the scope of the present invention, wherein a plurality of the unit bases (2) are provided on seven different parts

of the back support where the user's back contacts.

In this case, air ventilation is accomplished by the cushioning elements (3) on each of the unit bases (2) and also can be done through spaces formed among the plurality of the unit bases (2). Therefore, the effect of ventilation can considerably be enhanced.

In the fourth embodiment, as the cushion member (1) comprises a plurality of unit members (6), it may be troublesome to attach the unit members (6) to various parts of the back support of the rucksack (4) or the chair. However, by diversifying color, size, position, etc. of the unit members (6), the rucksack (4) or the chair can have various designs and provide aesthetic diversity.

As shown in Figs. 4 and 9, each of the cushioning elements (3) formed on the base (2) comprises a plurality of ribs (8) forming an internal space (7) therein and a plurality of holes (9) formed by the neighboring ribs (8) and communicated with the internal space (7).

The ribs (8) are very important since they serve to keep cushion of the cushioning elements (3). If the ribs (8) are too weak in their strength, the cushioning elements (3) can be easily deformed flat by the weight of goods contained in the rucksack (4), so that the internal space (7) can be shut down and air ventilation cannot be made smoothly. Therefore, it is preferable that the ribs (8) are made from hard plastic material.

On the contrary, if the ribs (8) are too strong, the feeling of wearing can deteriorate.

Thus, the ribs (8) should be designed to keep a suitable feeling of wearing and prevent the internal space (7) from being shut down.

Fig. 9 shows a first embodiment of the cushioning elements (3) of the present invention, wherein the cushioning element (3) is in the form of honeycomb and includes three ribs (8). The ribs (8) form the internal space (7) therein and form three holes (9) communicated with the internal space (7) laterally. Further, the three ribs (8) converge to form a flat top surface (10), which is in contact with the user of the rucksack (4) or the chair, and another hole (11) is provided in the center of the flat top surface (10) to be communicated with the internal space (7).

The hole (11) on the flat top surface (10) serves to minimize the generation of heat from the user's back by minimizing the contact area with the user's back, rather than to improve ventilation.

Fig. 10 shows a second embodiment of the cushioning elements (3) of the present invention, wherein each of the cushioning elements (3) is in the form of a curved pentahedron and includes four ribs (8). The ribs (8) form the internal space (7) therein and form four holes (9) communicated with the internal space (7) laterally. Further, the four ribs (8) converge to form a flat top surface (10), which is in contact with the user of the rucksack (4) or the chair, and another hole (11) is provided in the center of the flat top surface (10) to be communicated with the internal space (7).

As in the first embodiment shown in Fig. 9, the hole (11) on the flat top surface (10) in Fig. 10 serves to minimize the generation of heat from the user's back by minimizing the contact area with the user's back.

Fig. 11 shows a third embodiment of the cushioning element (3) of the present invention, wherein the cushioning element (3) is in the form of a curved tetrahedron and includes three elastic ribs (8). The elastic ribs (8) form the internal space (7) therein and form three holes (9) communicated with the internal space (7)

laterally. However, the end of each of the three ribs (8) should be internally curved so that curved ends (8a) of the ribs (8) can form a hole (11) communicated with the internal space (7).

In this case, although the contact area between the cushioning elements (3) and the user's back can be minimized and the generation of heat and sweat from the user's back can be reduced, since the ribs (8) do not converge to form any flat surface and stand independently, the ribs (8) in this embodiment should be designed to be stronger than those in the other embodiments, in consideration of the load imposed thereon.

Fig. 12 shows a fourth embodiment of the cushioning elements (3) according to the present invention, wherein the cushioning elements (3) are consecutively arranged in the form of curved tiles (12), each of which includes alternately-arranged two vertical elongate holes (13a) and one horizontal elongate hole (13b). The vertical holes (13a) and the horizontal holes (13b) are communicated with the internal space (7).

According to the fourth embodiment as described above, the ventilation through furrows formed between the curved tiles (12) in the vertical direction of the drawing can be optimized.

The cushioning elements (3) can be formed in an overall uniform pattern on one side of the base (2), but they can be formed to have various shapes depending on where they are located.

Specifically, since the flow or the supply of plastic resin is not smooth to the edges of the base provided on the back support during an injection molding, the cushioning elements (3) may not be formed in a desired shape. Therefore, it is



preferable that the cushioning elements (3) on the edge portions of the base be formed to have different shape from those in the central portions. For example, as shown in Figs. 1 and 2, the cushioning elements (3) on the edge portions of the base may be formed to be larger than those in the central portions.

5               As described above, according to the present invention, it is possible to provide cushion members for a back support of a rucksack or a chair, which well ventilate between a user's back and the back support and reduce considerably the perspiration and heat generation by the user.

10              Further, the cushion members for a back support according to the present invention make a user feel cushioned and comfortable even after the user's wearing a rucksack or sitting on a chair for a long time.

15              It will be apparent to those skilled in the art that various modifications and variations can be made to the present invention without departing from the spirit and scope of the invention. The present invention covers the modifications and variations provided they come within the scope of the appended claims and their equivalents.